

PATENT COOPERATION TREATY

PCT

10/567263

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference S 2003/22	FOR FURTHER ACTION		See item 4 below
International application No. PCT/EP2004/051723	International filing date (<i>day/month/year</i>) 05 August 2004 (05.08.2004)	Priority date (<i>day/month/year</i>) 08 August 2003 (08.08.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant SOLVAY (Société Anonyme)			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland		Date of issuance of this report 13 February 2006 (13.02.2006)
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/051723

International filing date (day/month/year)
05.08.2004

Priority date (day/month/year)
08.08.2003

International Patent Classification (IPC) or both national classification and IPC
B01J23/06, C07C17/25, C07C5/09, C01B7/07

Applicant
SOLVAY (SOCIETE ANONYME)

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/051723

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/051723

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	9
Inventive step (IS)	Yes: Claims	-
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	-

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following document/s/:

D1: DE 24 38 153 A

D2: MÜLLER HERBERT ET AL: "Die selektive Hydrierung von Acetylene im
Herstellungsverfahren für Vinylchlorid" CHEMIE. INGENIEUR. TECHNIK,
VERLAG CHEMIE GMBH. WEINHEIM, DE, vol. 59, no. 8, 1987, pages 645-
647, XP002117589 ISSN: 0009-286X

D3: GB 924 627 A

D4: GB 811 820 A

D5: US-A-5 332 705

2. RE CLAIM 1

- 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1. D1 relates to the hydrogenation of acetylene present in an HCl containing mixture obtained from the pyrolysis of 1,2 dichloroethane. According to D1, a Pd on silica (< 3 m²/g BET area) catalyst is used (page 3, lines 5-40). D1 furthermore teaches that the catalyst may be regenerated (page 5, 2nd paragraph; page 11, lines 4-11; example 2). D1 does not indicate the regeneration conditions.

The subject-matter of claim 1 thus differs from D1 in that the regeneration is done in the presence of oxygen at 300 - 700 °C.

However, it is clear from D3 and D4 that a heat treatment in presence of air represents a common method for regenerating Pt group catalysts which had been used in acetylene hydrogenation (see passages indicated in the search report). This is also derivable from D5: D5 addresses the problem of providing an alternative regeneration process requiring a reduced number of air burns (col. 4, lines 57-68), implying that air burns are common in the art.

D4 furthermore specifies the heat treatment to be done at 400 - 500 °C (D4: example

4). According to D5, a temperature of 377 - 451 °C is common for oxygen treatments (column 2, lines 11-13).

It would be a straightforward choice for the skilled person to apply these known regeneration conditions to the catalyst of D1, because D3-D5 describe the regeneration of the same type of catalysts used in the same type of reaction, namely acetylene hydrogenation.

The subject-matter of claim 1 therefore does not involve an inventive step (Art. 33(3) PCT).

2.2 Similar considerations apply with respect to D2 (see passages cited in the search report).

3. RE CLAIM 9

3.1 A process for synthesizing VCM using a catalyst comprising a platinum group metal on an inert support is known (D1, D2).

The regeneration process at least partially reinstates the properties of the fresh catalyst. With all catalyst states ranging from "fresh" to "spent" being known, the subject-matter of claim 9 is not novel in view of any one of D1, D2 (Art. 33(2) PCT).

4. RE CLAIMS 2-8

Dependent claims 2-8 do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step.

5. Industrial applicability of the claimed subject-matter is acknowledged.